

## ROUTE OF THE SUBWAY

THE underground railroad, or technically speaking, the subway division of the Interborough Rapid Transit company, has a most comprehensive route. This route was changed several times before it met the full approval of the rapid transit commissioners. It starts at Battery park and then runs to Bowling Green under Broadway to Rector street and City Hall park. The four-track system begins at Park row and Broadway, running to Centre street from a loop in City Hall park under the main line at Park row and Mail street, and intersecting the main line at Brooklyn bridge and Frankfort street. The four tracks then continue under New Elm street to Elm; thence to Lafayette place; from Lafayette place to Fourth avenue; under Fourth avenue to 33rd street; thence by tunnel under Park avenue and the street railway tracks to 42nd street opposite the Grand Central station. Under 42nd street the subway continues to Broadway. At Broadway it tunnels under the Columbus monument at 59th street and continues to 96th street.

At 96th street the grades of the east and the west lines begin to diverge. Two tracks are continued on the high grade to 100th street, and three tracks on the lower grade pass under Broadway to 103rd street, and continue to 138th street. At 125th street the underground suddenly becomes an elevated railway. No change of scenery along the much-advertised picturesque routes of steam railway travel could be more startling.

Out of the tunnel the trains come with a whirl. From the brilliant electric light they come into the full glow of the daylight. From glittering white walls one is graduated to a landscape of houses, boulevard trees and the Hudson. Like a flash the trains rush

Broadway. Between 146th and 147th streets the road develops into two tracks, which continue in a tunnel to Kings Bridge road and Eleventh avenue, and thence under Eleventh avenue to Dyckman street, the distance from the base of the rail to the street surface varying from twenty-nine to a hundred and twenty-eight feet. At Dyckman street the line passes into Nagle avenue, and thence over a viaduct continues with three tracks along that thoroughfare to 218th street. Thence it passes onto Kings Bridge road, crossing the Harlem ship canal and Spuyten Duyvil creek by bridges, continuing along Riverdale

length of the viaduct over which the road passes in The Bronx is sixteen thousand four hundred and eighty feet, with an average height of eighteen feet.

The underground station platforms are from two hundred to three hundred and fifty feet in length and sixteen feet wide, and have from two to four stairway entrances and exits. Each station has a ticket booth, and the outside exits and entrances have sheltering hoods of iron and wired glass, called kiosks. The greatest care has been taken and the best of taste has been exercised in the arrangement and decoration of these stations. The City Hall station, for instance, has been finished in a quiet elegance that gives one more an idea of the lobby of a theater than of an underground station. The work was done at a cost of eighty thousand dollars. The floors of the platform are of concrete. The walls are of brick, enameled tiles, faience or terra-cotta. The roof is domed, and the prevailing colors, cream and green, are well brought out by hundreds of incandescent lights, grouped in clusters. To the north and south the four-tracked subway lengthens out of sight, lost in the white glare of the electric lights.

This same general plan, although not on such an extensive scale, has been carried out with the other stations. The bases of the walls for a height of thirty inches consist of hard, vitrified, but light-colored bricks to withstand the rough treatment that such portions of the walls are certain to meet. Above this brick base the main treatment of the surface is of white tiles divided into panels by decorative work in colored tiles and faience. The name of the station is boldly displayed by large decorative tablets at intervals, and the number of the street, if numbered, or the initial letter, if named, is worked in the design of the cornice at spaces of about fifteen feet, facilitating passengers in recognizing stations from car windows.

## Many Millions for Rapid Transit

Present Subway .....	\$65,000,000
Pennsylvania Railroad Tunnel .....	50,000,000
New York & Jersey Railroad Tunnel .....	10,000,000
Hudson & Manhattan Railroad Tunnel .....	10,000,000
New York Central Tunnel and Terminal .....	20,000,000
Williamsburg Bridge .....	20,000,000
Manhattan Bridge .....	20,000,000
Blackwell Island Bridge .....	10,000,000
Plans for future Rapid Transit roads .....	100,000,000
Total .....	\$305,000,000

avenue, still over ground, to its northern terminal, 230th street and Bailey avenue.

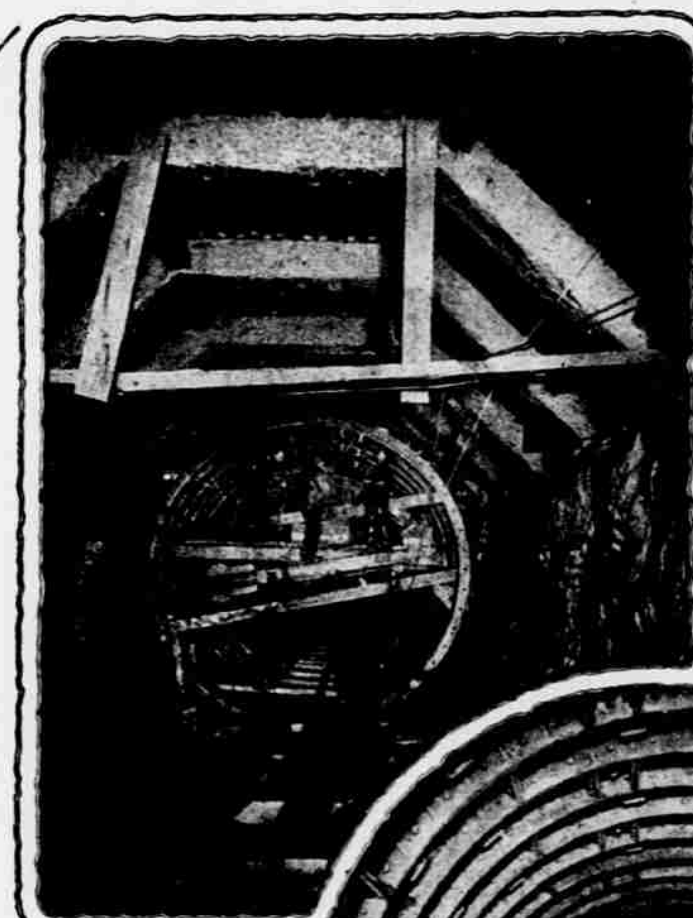
The length of the viaduct over which the road passes in this branch is eighty-six hundred feet, and the height is twenty feet. The length of the single tracks on the western line is forty-eight miles, and the entire length of this division is thirteen and one-half miles, consisting of four, three and two tracks.

The eastern line begins at 100th street and Broadway. There are three tracks till 104th street is reached, when the road branches into two tracks in the tunnel under Central Park West. From this point the underground burrows beneath Central park at a depth of a hundred and ten feet to 110th street and Lenox avenue. Thence it continues under Lenox avenue to a point between 141st and 142nd streets, where it pushes to the east under the Harlem river. The length of the tubes under the river is six hundred and twenty-three feet, and the greatest depth below mean highwater is forty-eight feet. The road enters The Bronx at 149th street near Bergan avenue. It then proceeds to a point near Gerard street, where it emerges onto a viaduct along Westchester avenue to Southern boulevard, whence it continues along Boston road to Bronx park and 182nd street—a distance of seven miles from 100th street, with seventeen and one-half miles of single tracks. The total

## ENGINEERING FEATS

ONE of the many engineering feats in the construction of the subway that attracted widespread attention was building the tunnel under the Harlem river without resorting to compressed air, as is usual in such cases. The United States authorities required that a maximum depth of twenty feet should be left clear at low tide, and thus the elevation of the tunnel roof was fixed. The sub-contractor, instead of using a shield or some of the well-known methods requiring compressed air, excavated the river bottom to about grade level by means of a dredge. The material removed was mud with clay beneath it.

After the excavation had been made he drove twelve-inch tongued and grooved sheet piling into the bottom of the river, and then, by the aid of divers, fixed cross braces in places. The water was then pumped out, and the coffer-dam was found to be sufficiently tight to prevent leakage, although the



Putting the Tube in the Brooklyn Subway

across this depression of the Manhattan valley and bob into the opening of the tunnel which continues at 133rd street. This span is made on an arch over Manhattan street, consisting of three ribs of a hundred and sixty-eight and a half feet and forty-five and three-fourths feet in height at the tallest part. An underground inspection yard with eight tracks is located between 138th and 144th streets.

The three tracks are continued to 146th street and



Finishing the Tube



Placing Shield in Position in Brooklyn Tunnel